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Update on AIRS Quality Assessment Plan

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AIRS Science Team Meeting

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AIRS QA Objective

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To ensure the integrity of the AIRS data products as a climate record

-involves the health of the instruments, downlink, data processing system, not just the products

- we don't fix the Granule, we fix the process

The QA Plan

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- V2.0 QA Plan is currently being reviewed
  - Project review by: Dehghani, Gunson. Karnik, and Pagano
- Emphasis on Launch + 12 months after transition to DAAC processing
- Lays out Science Team and DAAC responsibilities

Science Team will be responsible for establishing Data Release criteria

AIRS QA Has Several Components

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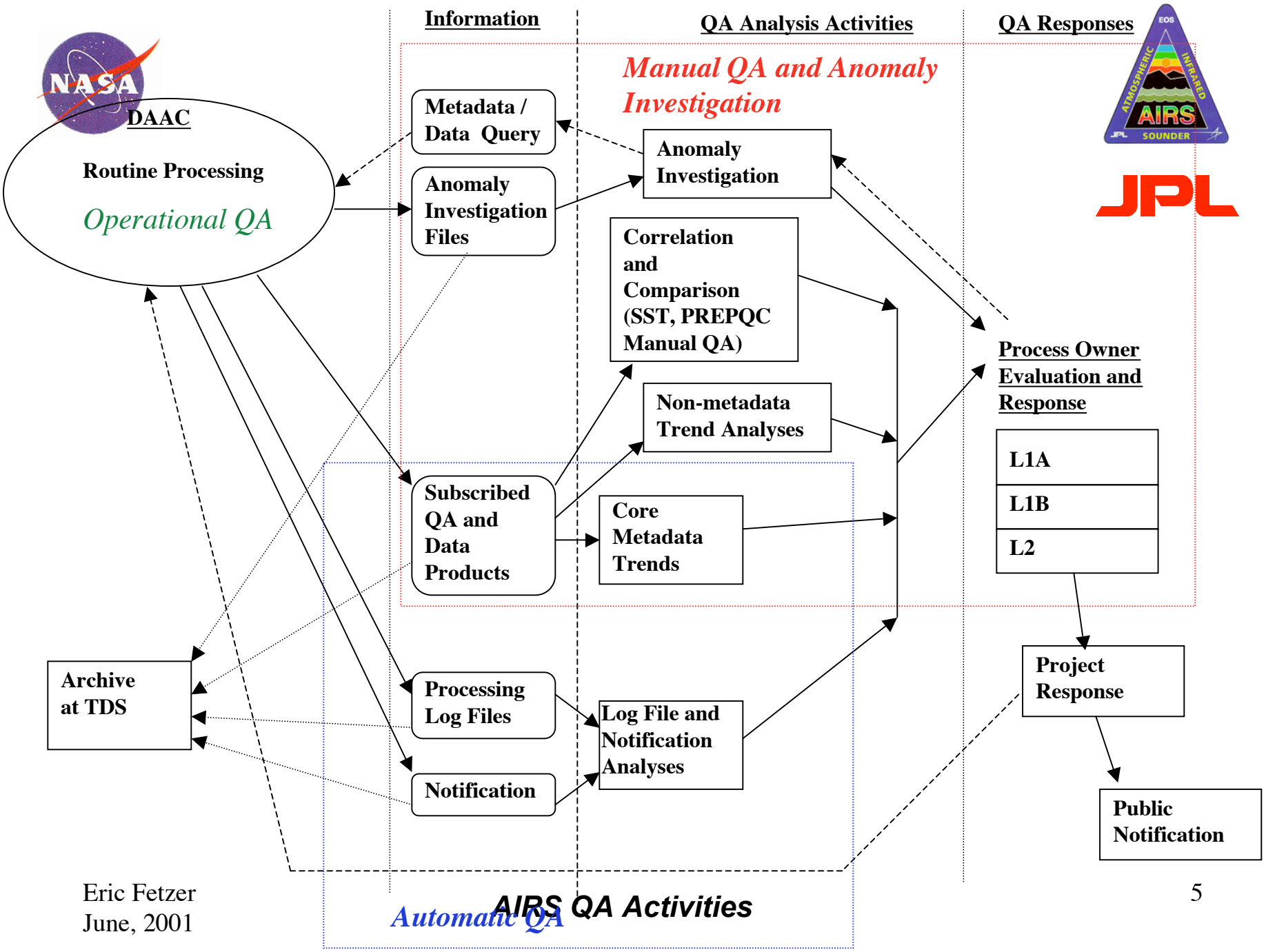
- High level QA flags
- PSAs, metadata, data subscriptions, notifications
- Automatic QA
- Manual QA by Science Team (and DAAC, ultimately)
- Long-term trend monitoring
- Long-term comparison with correlative data sets


Information
QA Analysis Activities
QA Responses
Manual QA and Anomaly Investigation
DAAC
Routine Processing
Operational QA
Metadata / Data Query
Anomaly Investigation Files
Anomaly Investigation
Correlation and Comparison (SST, PREPQC Manual QA)
Non-metadata Trend Analyses
Subscribed QA and Data Products
Core Metadata Trends
Process Owner Evaluation and Response
L1A
L1B
L2
Archive at TDS
Processing Log Files
Log File and Notification Analyses
Notification
Project Response
Public Notification
Automatic QA
AIRS QA Activities

AIRS Automatic QA

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- Readiness of files and maintaining data processing success
- Some parameters will automatically trigger notification e.g. :
  - Number of missing footprints within a granule
  - Number of floating point exceptions within a granule
- Others parameters will be monitored to ensure that the instruments and algorithms are stable. These are not PSAs. e.g. :
  - Many instrument engineering parameters
  - Number of microwave-only retrievals within granules

AIRS Manual QA

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- Two aspects to Manual QA
  - Routine monitoring of a select set of parameters at the TLSCF, e. g.:
    - Number of footprints with insufficient radiance information to perform retrieval
    - Number of unsatisfactory retrievals
  - Investigation at the TLSCF of anomalies reported by Automatic QA or revealed by routine monitoring

Trend Analysis

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- Some parameters will be monitored over short or long time periods. THE classic example:
  - How do the calibration coefficients vary over
    - Orbit (day/night; South Atlantic Anomaly)?
    - Orbit repeat cycle (233 orbits, approximately 15 days)?
    - Lunar Cycle?
    - Year (Long term changes in instruments)?

Note: More than PSAs will be monitored. For example, calibration coefficients are defined per scanline.

Long-Term Comparison

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- At some point the validation comparisons become long-term quality assessment monitoring, e.g. :
  - Comparison with operational radiosondes
  - Comparison with operational marine buoys
  - Occasional dedicated radiosonde launches

Why? The system might be stable and internally self consistent, but drifting.

Three High-Level QA Flags

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- Operational QA Flag
  - Monitors the state of DAAC computers and storage media
  - Assessment is a DAAC responsibility
- Automatic QA Flag
  - Checks for anomalous values
  - Monitors processing software and
  - Assessment is a TLSCF responsibility
- Science QA Flag
  - Likely to be replaced by Product Quality types

Science Team must determine
data access criteria and data release

Proposed Data Product Types

QA Working Group, 3/2001. Letter to Michael King 5/22

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- Beta Products
  - Early release product, minimally validated and may still contain significant errors
  - Available to allow users to gain familiarity with data formats and parameters
  - Product is not appropriate as the basis for quantitative scientific publications

Proposed Data Product Types

Continued

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- Provisional Products
  - Product quality may not be optimal
  - Incremental product improvements are still occurring
  - General research community is encouraged to participate in the QA and validation of the product, but need to be aware that product validation and QA are ongoing
  - Users are urged to contact science team representatives prior to use of the data in publications
  - May be replaced in the archive when the validated product becomes available

Proposed Data Product Types

Continued

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- Validated products:
  - Formally validated product, although validation is still ongoing
  - Uncertainties are well defined
  - Ready for use in scientific publications, and by other agencies
  - There may be later improved versions
  - Earlier validated versions will be deleted from the archive after a 6 month overlap period, but code for earlier versions will be maintained indefinitely

Current (and Future) AIRS QA Emphasis

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- Finalise V2.0 of QA Plan by 6/29/01
- Develop a PGE to extract QA parameters from products for detailed analyses and trending
- Establish criteria for Beta, Provisional and Validated Product releases